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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,955	01/23/2006	Masato Kurihara	126435	3082
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/561,955

Applicant(s)

KURIHARA ET AL.

Examiner

JUN LI

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/55/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) claim 1-8, drawn to a carbon material for electrode, electrode and nonaqueous battery products.

Group II, claim(s) 9-15, drawn to a method for making recited carbon material, electrode and battery products.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Claim 1 is anticipated or obvious over, e. g. JP2000-223121 in view of JP2002-083595. As the recited carbon material does not make a contribution over the prior art, unity of invention is lacking and restriction is appropriate.

During a telephone conversation with Ms. Azza on April 6th 2009 a provisional election was made with traverse to prosecute the invention of group I, claim1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claim 9-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

3. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result**

in a loss of the right to rejoinder. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
- 4. Claim 1-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP2000-223121) in view of Sugano (JP2002-083595).**

Kurihara teaches a carbon material for an electrode having a specific surface area of 0.1-900 m²/g formed by thermal plasma-treating raw material powder (abstract, claim 1, 6, ([0001], [0031]).

Regarding claim 1 and 2, Kurihara fails to expressly teaching adding a sulfur compound into the carbon material by using a gas atmosphere including a sulfur-containing compound.

Sugano teaches adding sulfur for manufacturing carbon material for nonaqueous solvent secondary battery electrodes because sulfur addition can increase the degree of graphitization, high service capacity and high charge and discharge efficiency ([0012]) wherein 5% weight of sulfur was used ([0017]).

It would have been obvious to one ordinary skill in the art to adopt the addition of sulfur as taught by Sugano to improve the carbon material for electrode of Kurihara. One of ordinary skill in the art would have been motivated to provide a sulfur-containing compound to the gas atmosphere during plasma-treating because sulfur addition can increase the carbon material graphitization degree, high service capacity and high charge and discharge of the carbon material for electrode as taught by Sugano([0012]). Furthermore, adopting known technique to improve efficiency of similar method is well within the scope of one ordinary skill in the art.

It is to be noted that the recited surface area in the instant application is overlapping with the prior art, thus a prima facie case of obviousness exists (See § MPEP 2144.05 [R-5] I).

Regarding claim 3 and 4, Kurihara further teaches carbon material such as graphite, acetylene black and Ketchen black etc can be used together with metallic sulfide to make carbon materials for positive electrode materials (anode) ([0057], [0043]) while an electrode comprising paint for negative electrode (cathode) including

an improved coal raw material, which indicates carbon material can be both used as an anode and cathode

As for the recited sulfur mass ratio range in the instant claims, it is to be noted that discovering an optimum value of a result-effective variable requires only routine skill in the art (See MPEP §2144.05 [R-5] II). In the instant case, the amount of sulfur added into the carbon material is a result effective variable because Sugano already teaches addition of sulfur (such as 5% weight as discussed above) will affect the carbon material and its related electrode properties. Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the amount of sulfur for a desired carbon material and a desired electrode from such carbon material.

Regarding claim 6, Kurihara further teaches an electrode comprising a paint for negative electrode including a improved coal raw material and a binder ([0052]) which are then painted on a charge collector which made from aluminum, copper, nickel, titanium etc ([0053], [0054]).

Regarding claim 7 and 8, Kurihara further teaches the lithium secondary battery can include an anode, a negative electrode (cathode)([0055], [0061]) while different nonaqueous solvent for electrolysis solution ([0059]) while the structure of the lithium secondary battery is not limited([0061]). As for the recited electrolyte layer arranged between the anode and cathode is an obvious arrangement for one ordinary skill in the art.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara (JP2000-223121) in view of Sugano (JP2002-083595) as applied to claim 1-4 and 6-8 above, and further in view of Takami (US5340670).

The references of Kurihara in view of Sugano fail to expressly teach the carbon material capable of inserting and desorbing lithium ion.

Takami teaches a carbon material for lithium secondary battery is capable of absorbing and desorbing lithium ion to suppress the reaction between lithium and the nonaqueous electrolyte thus prevent precipitation of lithium dendrites (column 1 lines 61- column line2).

It would have been obvious to one ordinary skill in the art to adopt the lithium ion absorbing and desorbing capability of carbon material as taught by Takami to improve the carbon material for electrode of Kurihara in view of Sugano. One of ordinary skill in the art would have appreciated to do so because lithium ion absorbing and desorbing capability can suppress the reaction between lithium and the nonaqueous electrolyte thus prevent precipitation of lithium dendrites as taught by Takami (column 1 lines 61- column line2). Furthermore, adopting known technique to improve efficiency of similar method is well within the scope of one ordinary skill in the art.

Conclusion

1. All the claims are rejected for the reasons of the record.
2. The additional references on the 892 have been cited as art of interest since they are cumulative to or less than the art relied upon in the rejections above.

3. The additional references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am EST-5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/

Examiner, Art Unit 1793

/J. L./

05/11/2009

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/Melvin Curtis Mayes/

Supervisory Patent Examiner, Art Unit 1793